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Activo: Assessing the Feasibility of Designing and Implementing a Physical Activity Intervention for Latino Men

Background: No physical activity (PA) interventions have specifically targeted Latino men despite marked health disparities in this group. Therefore, we explored the feasibility of designing a PA intervention for Latino men. **Methods:** We conducted six qualitative interviews with Latino men and used their feedback to modify an existing PA intervention, then conducted a 12-week demonstration trial of the adapted intervention. **Results:** Themes from interviews included work and family conflicts and preferring team sports. In the demonstration trial of the modified intervention, participants (N = 10) increased PA from 1.3 minutes/week (SD = 4.75) at baseline to 125.5 (SD = 154.86) at follow-up ($p < .05$). Retention was high and participants expressed enthusiasm for the program. **Conclusions:** Existing interventions could be effectively modified to target physical activity in Latino men.

Keywords: physical activity; health disparities; Latinos; cultural barriers; tailored intervention

While most Americans are not sufficiently active, activity is particularly low in racial and ethnic minorities. Compared to 28% of non-Latino Whites, 45% of Latinos in the US report never engaging in any leisure time physical activity (PA) (Schiller, Lucas, Ward, & Peregoy, 2012). Latinos also suffer disproportionately from health conditions related to lack

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of PA, such as obesity and diabetes (Caballero, 2007; Ogden, Carroll, Kit, & Flegal, 2012). Such health disparities represent a serious public health concern and require further investigation. Accordingly, numerous studies have recently emerged examining predictors, barriers, and interventions to increase PA in Latinos.

To date, however, most of this research has exclusively focused on Latino women (Latinas). In fact, no PA interventions to date, to our knowledge, have specifically targeted Latino men, which is surprising considering low rates of inactivity and related chronic disease in this group. While Latino men do report more PA than Latinas, they still report less PA than men of other racial/ethnic groups, and display marked health disparities. The rates of overweight/obesity among Latino men in the US are the highest of any major demographic group (80%) (Ogden et al., 2012). Moreover, diabetes prevalence in Latino men is nearly 50% greater than in White men (Schiller et al., 2012). Clearly, there is a need for intervention in this at-risk group.

One barrier to conducting interventions with Latino men may be a lack of formative research available on this population. Very little data are available on which factors may best facilitate PA adoption/maintenance in Latino men, or which barriers should be targeted by interventions. It is likely that many of these factors would be unique from those found in Latinas; while Latinas report culturally specific barriers, many of these are related to gender and gender-roles, such as an emphasis on childcare duties and cultural standards for female weight and body shape (Eyler et al., 1998; Marquez, McAuley, & Overman, 2004). In one recent focus group study with male Mexican immigrants, men reported demanding work schedules, lack of facilities, and lack of programs in Spanish as barriers to being active (Martinez, Powell, Agne, Scarinci, & Cherrington, 2012). Interventions with Latinos have also generally catered to preferences of Latinas by offering walking groups and aerobic dance classes as activity options. These activities may be of little interest to Latino men; however, again, the data on activity preferences in this population are sparse.

Limited research does suggest, however, that Latino men may be open to participating in physical activity interventions that were specifically targeted for them (Martinez et al., 2012), and that the vast majority of Latinos do believe in the health benefits of PA (Mathieu et al., 2012). The development of appropriate interventions for Latino men could therefore be well received by this at-risk population, and could help reduce existing disparities.

Individually tailored physical activity interventions based on Social Cognitive Theory and the Transtheoretical Model have already been shown to be effective in increasing weekly minutes of moderate-to-vigorous PA in studies with mostly White, Non-Hispanic participants. (Bock, Marcus, Pinto, & Forsyth, 2001; Marcus, Banspach, et al., 1992; Marcus et al., 1998; Marcus, Lewis, et al., 2007; Marcus, Napolitano, et al., 2007a; Marcus, Rossi, Selby, Niaura, & Abrams, 1992). Moreover, culturally and linguistically adapted versions of such PA programs have shown great promise with Latinas in a recent pilot randomized controlled trial (D.W. Pekmezi et al., 2009), as well as in two ongoing RCT's with Latinas. (Marcus et al., 2013; D. Pekmezi et al., 2012).

In the current study, we extended this line of research to Latino men by conducting formative research (individual interviews with Latino men, comprehensive literature reviews) to better understand cultural and gender-specific perceptions, barriers, and preferences for PA in this understudied target population. This information was used to adapt the existing empirically-supported, theory-based PA intervention specifically for Latino men. A demonstration trial of the resulting program, as well as further qualitative research, were then

conducted to determine the feasibility and acceptability of such interventions for promoting PA among Latino men.

METHODS

This research project involved several phases: 1) semi-structured qualitative interviews with Latino men on PA barriers, intervention needs and preferences, 2) feedback was used to adapt an existing PA intervention for Latinas, (D. Pekmezi et al., 2012; D.W. Pekmezi et al., 2009) to meet the needs of Latino males, and 3) a 12-week demonstration trial of the modified intervention with Latino males.

Participants

Both protocols were approved by the University of California, San Diego Institutional Review Board, and written informed consent was obtained. Recruitment efforts included placing flyers in locations where there is a high traffic of Spanish-speakers, such as local Latino churches, markets, festivals, and events, as well as English and Spanish ads on the web. Participants for both the qualitative interviews and demonstration trial were adult men (between 18 and 65 years old) who self-identified as Latino or Hispanic, were free of known heart disease, diabetes, orthopedic conditions, or other health conditions that might make exercise unsafe, had a body mass index (BMI) < 45, and were able to read and write in Spanish. During the screening stage, participants were asked if they have participated in any moderate intensity exercise in the past month, and to provide detail about their frequency and duration. They were also asked if there was anything that may interfere with their ability to walk continuously for 30 minutes, or may limit their daily activity or ability to exercise. Those who were underactive at baseline (participating in moderate intensity PA for less than 60 minutes per week) were eligible to participate in the study. For the demonstration trial, participants had to have access to a mailbox or P.O. Box.

Stage 1: Formative Interview Procedure

We conducted individual semi-structured interviews with Latino men to gain a better understanding of their perceptions of PA, the barriers that keep them from being physically active, and the features of a PA intervention that would be most important and helpful to them. Participants met individually with a trained bilingual research assistant who conducted interviews in the language of the participant's choosing (English, Spanish, or both). The interviews were conducted using a guide developed by a Ph.D. researcher trained in qualitative methods. This guide contained detailed open-ended questions as well as intent statements to aid the interviewer in obtaining desired information from participants. The interviews lasted approximately 60 minutes and were audio recorded as well as transcribed and translated (if in Spanish) verbatim. Once transcribed, summaries of the interviews were created addressing key concepts consistent with prior literature and theory (a deductive process) as well as themes that were revealed by the participants (an inductive process). Illustrative quotes from participants were also included in the summaries to support the topics addressed by the interviewers. Two independent researchers then reviewed the executive summaries to formulate themes identified from the key concepts and topic areas presented. Discrep-

ancies were discussed with the entire research team until consensus was reached. Participants were paid \$30 for participating.

Intervention Adaptation

The intervention that was used as the starting point was chosen for several reasons. First, it had previously been shown to be efficacious in a variety of populations, including English-speaking men (Marcus et al., 1998; Marcus, Napolitano, et al., 2007b). Second, it had gone through extensive focus groups and cognitive interviews to linguistically and culturally adapt it to Spanish-speakers (D.W. Pekmezi et al., 2009). And third, it targets important theoretical constructs, from Social Cognitive Theory and the Transtheoretical Model, known to impact behavior change in different cultural groups (Marquez et al., 2004). We felt that using a theory-driven, efficacious intervention created a strong foundation from which to make modifications to target the intervention to address the needs of Spanish-speaking Latino men.

The existing empirically supported intervention (Marcus et al., 2013; D. Pekmezi et al., 2012; D.W. Pekmezi et al., 2009) was then adapted for Latino men using themes from the formative interviews, literature searches, and expertise of the research group. Based on qualitative interview themes, previously developed materials were modified and new materials were created. All intervention materials were then reviewed and revised through the consensus of two PhD-level bilingual/bicultural members of the study team with extensive experience in translation and back-translation, cultural adaptation, and Latino health behavior. Revisions included gender (from female to male) tense and reference changes for both written material and images (e.g., added pictures of men exercising), further simplification of materials previously written at a 4th grade reading level (D.W. Pekmezi et al., 2009) neutral cultural references, and the use of regionally appropriate terminology (e.g., included information about local community resources to engage in PA, such as classes, parks, and recreation centers).

Stage 2: Demonstration Trial Procedures and Measures

Tailored intervention. The 12-week Spanish-language individually tailored PA intervention was based on the Social Cognitive Theory and the Transtheoretical Model, and emphasizes behavioral strategies for increasing activity levels including goal-setting, self-monitoring, problem-solving barriers, increasing social support, and contingency management for meeting physical activity goals. After an in-person individual session with a Latino interventionist which focused on physical activity education (i.e., demonstrating moderate intensity PA, instructions for pedometer use, and discussing available community resources), goal setting, and addressing barriers, the intervention was delivered over 12 weeks through phone calls and mailed print materials. Phone calls at week 1 and 4 provided support and reviewed goal setting.

Print materials included physical activity manuals that were matched to the participant's level of motivational readiness and individually tailored computer expert system feedback reports. These reports were based on participants' monthly survey data and included information on: 1) current stage of motivational readiness for physical activity; 2) increasing self-efficacy for physical activity participation; 3) cognitive and behavioral strategies as-

sociated with physical activity behavior change (processes of change); 4) how the participant compared to prior responses (progress feedback); 5) how the participant compared to individuals who were physically active and with national physical activity guidelines (normative feedback); 6) self-monitoring of minutes of PA and steps per day. Other materials provided to participants included six tip sheets addressing exercising safely, motivation, goal setting, planning around work schedules, and friend and family involvement. Participants were paid \$10 per month for completing monthly surveys, and an additional \$35 for completing the follow-up interview.

Demonstration trial measures. Demographics were assessed at baseline with a questionnaire regarding age, education, income, employment status, race, ethnicity, nativity status, and marital status. The 7-Day Physical Activity Recall (PAR) was completed at baseline and 12-week assessments and served as the primary outcome measure. The 7-Day PAR assesses moderate to vigorous level physical activity (MVPA) performed during the prior week and provides an estimate of weekly minutes of physical activity across multiple domains (leisure, transport, occupation) (Blair et al., 1985; Sallis et al., 1985). Participants were asked if they engaged in any physical activity that was nonstop and continuous for 10 minutes or more at a moderate intensity level or higher. Only physical activities or exercises that met these criteria were recorded and analyzed. The 7-Day PAR has consistently demonstrated acceptable reliability, internal consistency, and congruent validity with other more objective measures of activity levels (Hayden-Wade, Coleman, Sallis, & Armstrong, 2003; Irwin, Ainsworth, & Conway, 2001; Johnson-Kozlow, Sallis, Gilpin, Rock, & Pierce, 2006; Leenders, Sherman, & Nagaraja, 2000; Leenders, Sherman, Nagaraja, & Kien, 2001; Pereira et al., 1997; Prince et al., 2008; Sloane, Snyder, Demark-Wahnefried, Lobach, & Kraus, 2009; Wilkinson, Huang, Walker, Sterling, & Kim, 2004). It is sensitive to changes in moderate intensity physical activity over time (Dunn et al., 1998; Dunn et al., 1999) and has good test-retest reliability among Latino participants (Rauh, Hovell, Hofsetter, Sallis, & Gleghorn, 1992). Objective physical activity levels, including both movement and intensity of activity, were also measured using the ActiGraph GT3X+ accelerometer (ActiGraph, LLC; Pensacola, FL). The GT3X+ is a lightweight (19g) triaxial solid state accelerometer, with a dynamic range of $\pm 6g$ and a user-specified sampling rate of 30-100hz (in 10hz increments) (John & Freedson, 2012). The device is approximately 2"x2"x0.5" in size and is worn on the hip attached to a belt around the waist. Participants wore the accelerometers for 7 days prior to baseline and 12-week assessments (overlapping with the 7-Day PAR recall period). Data from the accelerometers were processed using ActiLife 5 software, with a cut point of 1952 as the minimum threshold for moderate intensity activity and minimum activity duration of 10 minutes (Freedson, Melanson, & Sirard, 1998).

The processes of change measure was administered at the baseline assessment and then again at weeks 4 and 8 via mail. These data were used to help generate the tailored expert system feedback reports. The 40-item questionnaire contains 10 sub-scales that address a variety of cognitive and behavioral strategies associated with physical activity behavior change. Internal consistency of the sub-scales ranged from .62 to .96 (Marcus, Rossi, et al., 1992).

At 12 weeks, participant satisfaction with the intervention and study protocol was assessed with a 16-item measure that the research team has been used in several past studies. (Bock et al., 2001; Marcus, Napolitano, et al., 2007a; D.W. Pekmezi et al., 2010). This ques-

tionnaire was adapted to assess the feasibility and acceptability of this approach to promoting physical activity among Latino men.

RESULTS

Stage 1: Formative Interviews

Participants. Six men participated in the formative interviews. Men who participated in the interviews were generally young, ranging from 23 to 39 (mean = 30.66). The majority (83.3%) were of Mexican descent, and 33% were unemployed.

Interview themes. A summary of themes from the formative interviews is shown in Table 1. There was a strong overall consensus that group activities and team sports were preferable. Participants specifically mentioned soccer and basketball as preferred activities. Conversely, some wanted a PA program that included weight lifting, while the others were less interested in strength training. Men were similarly divided on whether or not gym memberships would be helpful in a PA program. One participant commented that he was “not one of those men” who goes to the gym, and another said he would prefer outdoor activities, though one participant said that having a gym close to home would be very helpful. Several men said specifically that they were not interested in jogging or running long distances.

Most men mentioned the importance of family and partners, but were divided on whether they should be included in their PA; some men preferred exercising with a partner, while others saw time with partners and family members as a limited resource that they would rather not spend doing exercise. Overall, however, there was a consensus that family-centered messages would be the most effective approach, perhaps because support for PA from family and friends appeared to be quite motivating. One participant mentioned relying on his grandmother’s influence to motivate himself to be active. Another participant emphasized that a family-centered program would help remove the barrier of him wanting to spend free time with his partner since they could be active together.

Only one of the six men preferred to receive English-language materials, while the rest had either no preference or preferred Spanish. Four of the men preferred to receive culturally tailored information that was specific to Latinos, with one stating it was very important to him, while two men felt it was not an important feature for a PA program.

The most commonly cited barrier was a lack of free time due to work, school, or family obligations. Several men also mentioned the influence of Latino culture as a barrier; one noted that the “whole community is overweight,” and several mentioned negative cultural influences on food choices. One participant noted that he was actually the most active of all his Latino relatives (despite being considered underactive by study eligibility criteria).

Based on these findings, we made several modifications to the intervention (see Table 1). To accommodate a preference for team sports, we modified the guide of local activity resources to include information on local low cost and free sports leagues, and included schedules of free informal (“pickup”) games at local recreation centers and parks throughout the area. We also modified intervention content to include more images of families being active together, included lists of resources for activities men could do with their families, such as local family-friendly hiking trails and bike paths, and created an additional tip sheet on being active with partners and children.

Table 1
Themes from Formative Interviews and Resulting Modifications Made to Intervention Materials

Theme/Preference	Modification
Preference for team sports	Provided information and schedules for free and low-cost local sports teams and informal (“pickup”) games at local recreation centers, parks, and community organizations
Preference for Spanish language materials	Used Spanish language version of the intervention; modified materials for regionally appropriate terms and vocabulary
Conflicts with family time	Created a new tip sheet for getting family involved in physical activity; provided information on local activity resources that were appropriate for all ages (e.g., community centers, easy hiking trails)
Conflicts with work/lack of time	Provided tips for exercising at work or for transportation and on finding time with a hectic schedule; highlighted low-cost local team sports that occurred on nights and weekends
Preference for family-oriented messages	Reframed messages to focus on importance of being healthy for the sake of family and setting a good example for family members
Influence of Latino culture	Provided data on health in Latinos specifically; included pictures of Latino men and women being active; included appropriate cultural references relevant to health
Limited funds for fitness	Reframed physical activity to include behaviors that do not require gym membership or special equipment, and provided information on low or no cost activity resources in the community (e.g., hiking and walking trails, recreation centers, pickup soccer games)

Stage 2: Demonstration Trial

Participants. For the demonstration trial, a total of 59 individuals were screened; of these, 37 (63%) were eligible. The most common reasons for ineligibility were already being too active ($N = 10$) or contraindicating health conditions ($N = 5$). The majority of participants who called but were not screened ($N = 26$) were calling seeking employment opportunities, or reported living too far from the study site (and/or across the border) to come to in-person sessions. Of the 37 eligible individuals, 16 (43%) attended an orientation session, and 10 (63%) of these signed a consent form and were enrolled. All 10 of those enrolled completed the baseline and 12 week-assessment visits.

Table 2. presents baseline characteristics of the sample. Participants in the demonstration trial ($N = 10$) were 40.20 years of age on average ($SD = 11.23$) with mean BMI equal

to 31.09 at baseline ($SD = 4.80$). The majority of the men (90%) identified as having Mexican origins and 80% were employed at least part time. Participants reported engaging in an average of 1.50 minutes/week of PA ($SD = 4.74$) at baseline.

Outcomes. On average, the men reported increasing their PA from 1.50 min/week ($SD = 4.74$) at baseline to 125.70 min/week ($SD = 158.08$) at 12 weeks, corresponding to a mean increase of 124.20 min/week, $SD = 154.86$). A paired t-test showed that this within-participant increase was significant, $t = 2.54$, $p = 0.032$. However, focus was not on strict hypothesis testing, as the sample size was limited. Furthermore, mean change in min/week of objectively measured MVPA from baseline to 12 weeks was 76.81 ($SD = 133.58$), representing a large effect size ($d = 1.24$). In addition, correlation between self-reported and objective measured changes in MVPA over 12 weeks was $\rho = 0.26$. With regard to the type of PA reported, the majority of men engaged in the following activities: running or brisk walking (both outdoors and on the treadmill) and the use of elliptical and cycling machines. Two men also reported recreational-related sports, including tennis and racquetball.

Results from the consumer satisfaction surveys ($n = 8$) and follow-up interviews ($n = 5$) generally found high satisfaction and enthusiasm for the program. Responses from the consumer satisfaction report revealed that all 8 of the men reported that they were either very satisfied ($n = 4$) or satisfied ($n = 4$) with the ACTIVO program. In addition, all surveyed participants reported feeling that the staff was kind, helpful and explained the study in a way that was easy to understand. The majority of participants felt that the personalized materials were motivating/very motivating and all felt they had learned something about exercise from the materials. All participants reported reading at least the majority of study materials and the majority described them as helpful/very helpful and pleasant/very pleasant. All participants reported that they would recommend the materials to a friend and were satisfied/very satisfied with the program.

DISCUSSION

In this study, we sought to develop a physical activity intervention for Latino men by conducting formative research to adapt an existing intervention to the needs and preferences of this population, and then conducting a demonstration trial of the modified intervention. Themes from formative interviews showed both similarities to and marked differences from themes from our previous work with Latinas. (Marcus et al., 2013; D. Pekmezi et al., 2012; D.W. Pekmezi et al., 2009). Like Latinas, Latino men expressed a preference for materials in Spanish rather than English, and cited family obligations as a major barrier to physical activity. However, while for Latinas the main family barrier was caregiving duties to children and other relatives, for Latino men the main family-related concern was having limited time to spend with family. While the barriers stated by Latino men and women share the commonality of a lack of time, men's barrier of limited time with family may also demonstrate the issue of choosing between spending their available time with family or exercising.

Activity preferences were mixed. Surprisingly, there was not an overwhelming desire for a strength-training component to a PA intervention, and participants were similarly split on whether gym memberships would be useful or necessary. There was, however, a strong preference for team sports, particularly soccer and basketball. This may be a key barrier to

Table 2
Participant Characteristics (N = 10)

Variable	% or Mean (SD)	Variable	% or Mean (SD)
<i>Sex</i>		<i>Annual Income</i>	
Male	100%	Less than \$10,000	0%
<i>BMI</i>	31.09 (4.80)	\$10,000-\$20,000	20%
<i>Age</i>	40.20 (11.23)	\$20,000-\$30,000	40%
18-24	0%	\$30,000-\$40,000	10%
25-34	30%	\$40,000-\$50,000	10%
35-44	40%	\$50,000 or more	20%
45-54	20%	<i>Employment Status</i>	
55-64	10%	Work full-time	20%
65+	0%	Work part-time	60%
<i>Education</i>		Not employed	20%
Less than high school	30%	Doesn't know	0%
High school diploma	20%	<i>Marital Status</i>	
Vocational/technical school	10%	Single (never married or living with a partner)	50%
Some college	10%	Divorced	0%
College graduate	0%	Separated	10%
Graduate school	20%	Widowed	0%
Post graduate studies	10%	Married	30%
<i>Ethnic Group</i>		Living with a partner	10%
Puerto Rican	0%	<i>Language Commonly Spoken and Read</i>	
Dominican	0%	Only Spanish	0%
Mexican	90%	More Spanish than English	30%
Cuban	0%	Both Equally	50%
Guatemalan	0%	More English than Spanish	20%
Columbian	0%	Only English	0%
Other Spanish/Hispanic/Latino Group	10%	<i>Language Commonly Spoken at Home</i>	
<i>Race</i>		Only Spanish	30%
White	50%	More Spanish than English	60%
Black or African American	0%	Both Equally	0%
Indian American/Alaska Native	0%	More English than Spanish	10%
Mixed	20%	Only English	0%
Other	10%	<i>Time in The United States</i>	
Doesn't know/Did not respond	20%	First Generation	70%
		Second Generation	30%
		Third Generation	0%

PA for Latino men, as these activities do not easily include family members or fit in with long work hours. While most interventions with Latinas have focused on walking as the primary activity, our interviews suggested that interventions with men may need to include information on a wide range of possible activities. In our intervention, this included team sports and activities that could be done with family members and/or on their own at irregular times, including local hiking trails. There is relatively little research assessing preferences for physical activity in men in general, so it is uncertain whether these results are unique to MA men. One study of nationally representative data from Australia showed that men were much more likely than women to prefer team sports, yet still showed a marked preference for walking as their main activity (Booth, Bauman, Owen, & Gore, 1997). Men

in this study also reported lack of time as their main barrier to activity, yet were much less likely than women to report family obligations as a barrier. More research is needed to determine if preferences for and barriers to PA differ between men of different ethnicities, and the extent to which this should be factored into population-wide interventions.

Overall, the data suggest the intervention was effective, with men reporting significant increases in weekly PA from baseline to 12-weeks. Trial participants were markedly inactive at baseline, averaging just one minute of PA per week. Considering that most participants were not engaging in any PA at baseline, the significant increases seen over the 12 weeks are encouraging, and suggest the intervention may be effective with this population. Furthermore, all ten participants were retained for 12-week PA assessments, and responses to the consumer satisfaction survey suggest the intervention was well received.

Of course, the primary focus of the current study was to assess feasibility rather than efficacy, and interpretation of these data should be made cautiously given the small number of participants. Furthermore, there was no randomization or comparison group. There are also concerns regarding the representativeness of our sample. For example, the participants in the interviews were relatively young men ($M = 30.66$) and this may have been reflected in the preference for particular forms of activity. The adaption of the program for the intervention needs and preferences of MA males remains an ongoing iterative process. Future directions will include specifically recruiting older Mexican American males to learn more about their PA intervention needs and preferences, examining age as a moderator of intervention efficacy, and if necessary, developing a program to specifically address the additional, distinct PA intervention needs and preferences of older MA men.

One strength of this study was that it was one of the first to look at adapting a physical activity intervention specifically for Latino men. In addition, the data suggest that a PA intervention targeting the unique needs and preferences of this population may be well received and effective in increasing PA. More research is clearly warranted to more thoroughly test the efficacy of this intervention in a larger randomized controlled trial and, subsequently, provide a better framework for effectively disseminating our findings into the Latino community.

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